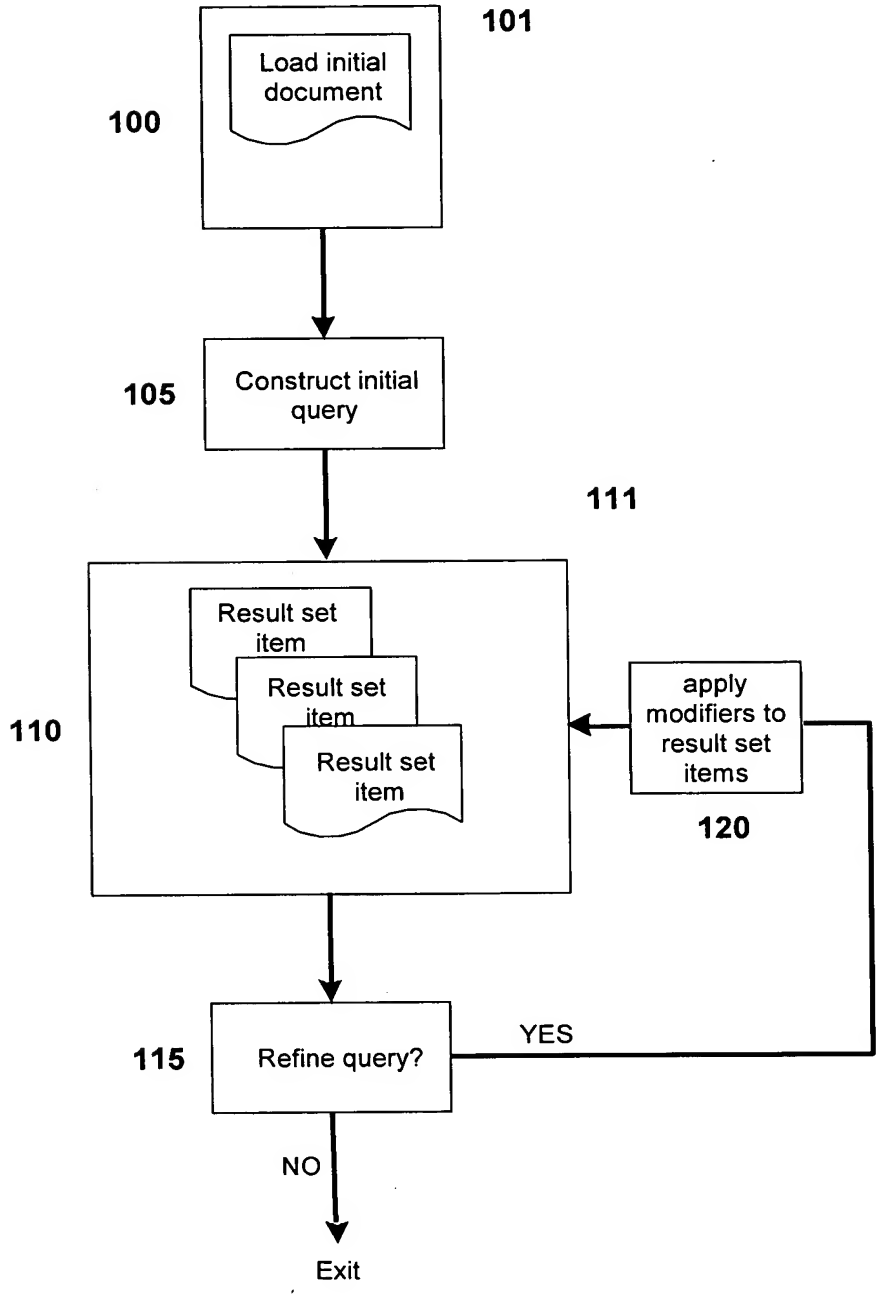

101
Load initial document
100
105
Construct initial query
111
Result set item
Result set item
Result set item
110
apply modifiers to result set items
120
115
Refine query?
YES
NO
Exit

FIG. 1

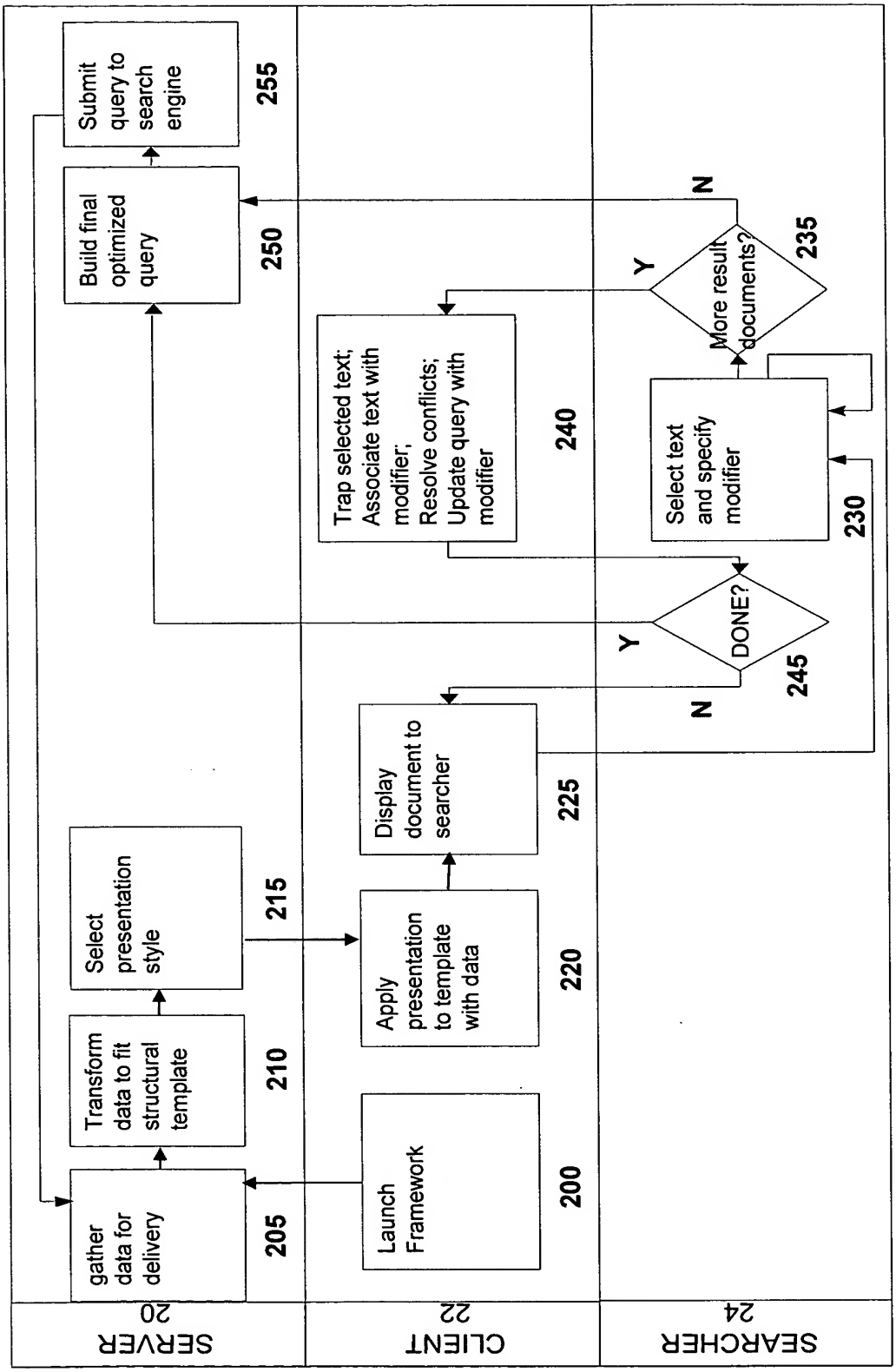

SERVER
20
CLIENT
22
SEARCHER
24
Launch Framework
200
gather data for delivery
205
Transform data to fit structural template
210
Select presentation style
215
Apply presentation to template with data
220
Display document to searcher
225
Select text and specify modifier
230
More result documents?
235
Y
N
Trap selected text; Associate text with modifier; Resolve conflicts; Update query with modifier
240
DONE?
245
Y
N
Build final optimized query
250
Submit query to search engine
255

FIG. 2A

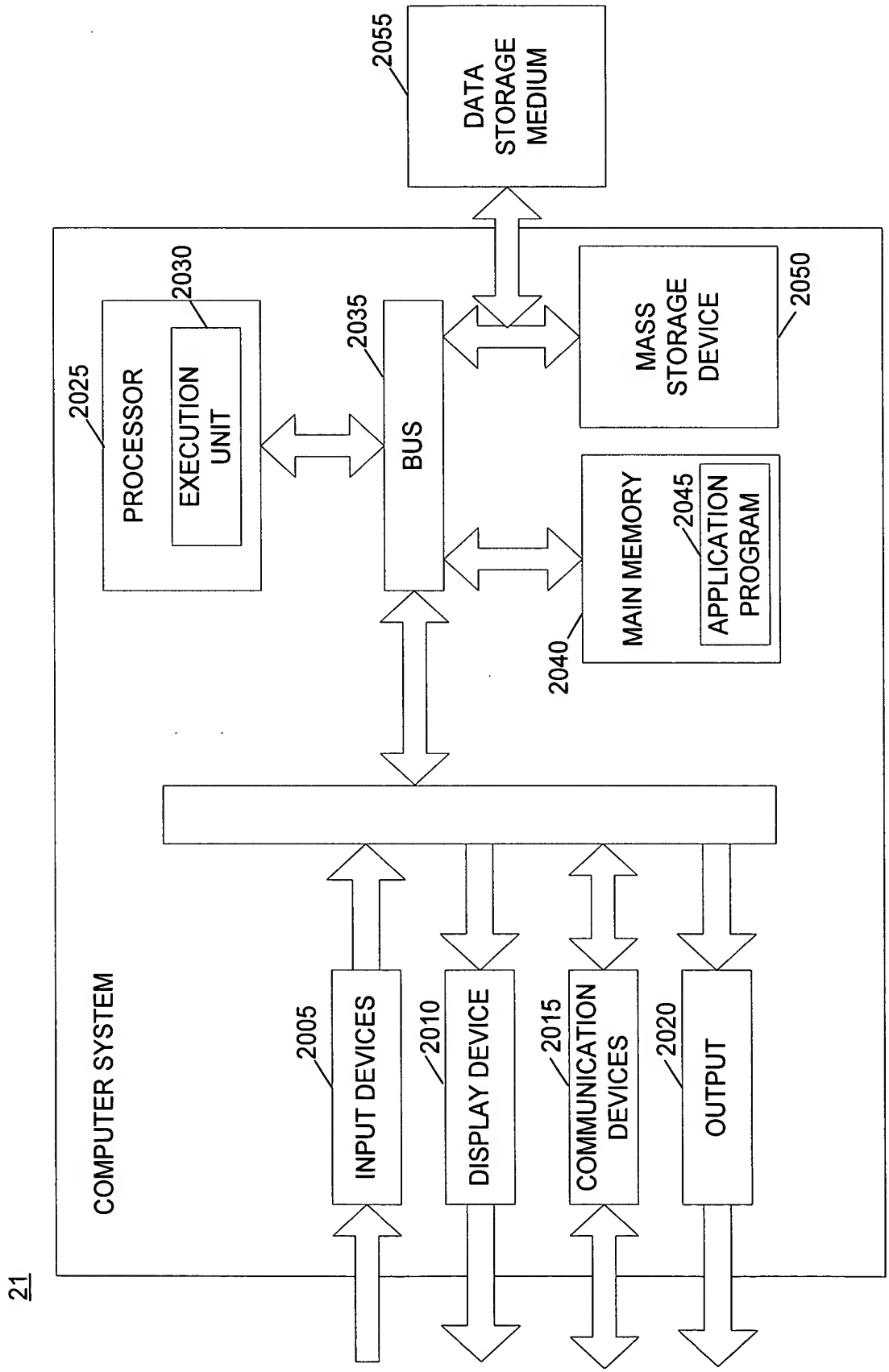
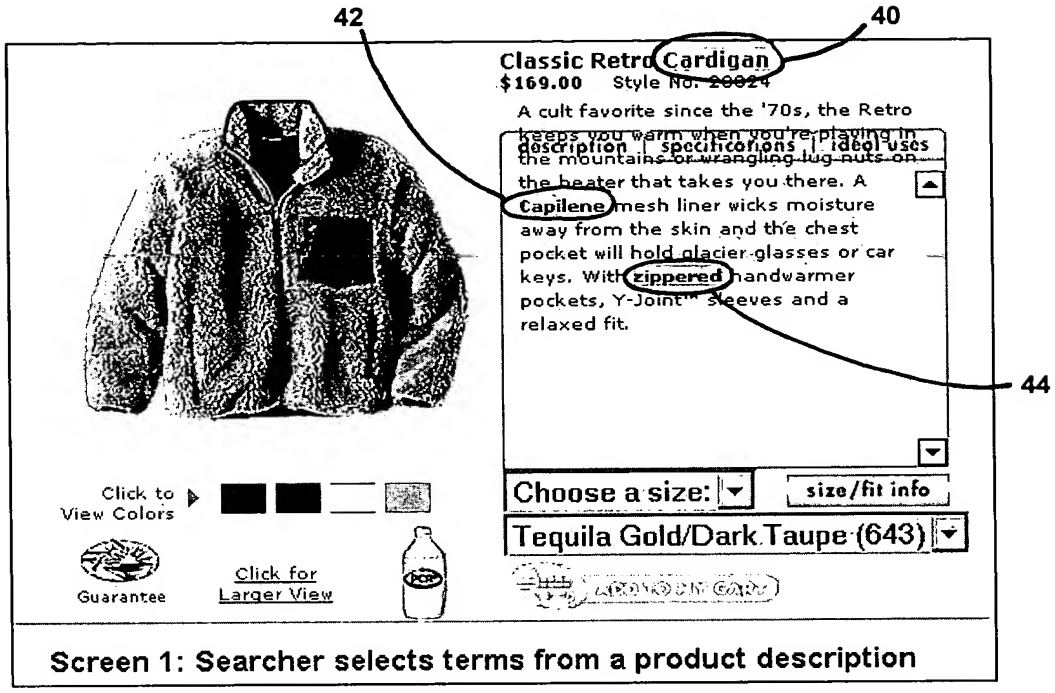

21
COMPUTER SYSTEM
2025
PROCESSOR
2030
EXECUTION UNIT
2035
BUS
2040
MAIN MEMORY
2045
APPLICATION PROGRAM
2050
MASS STORAGE DEVICE
2055
DATA STORAGE MEDIUM
2005
INPUT DEVICES
2010
DISPLAY DEVICE
2015
COMMUNICATION DEVICES
2020
OUTPUT

FIG. 2B

```
300   if (document.structureType == XML) {
301     XMLGrammar = document.retrieveDTD();
302     if (XMLGrammar.DTDType == Physical) {
303       XMLElementWeights = loadElementWeights(elementWeightFile);
304     }
305     else {
306       structuralElements = document.buildStructure(XMLGrammar);
307     }
308   }
309   else {
310     if (document.wellFormed) {
311       pseudoStructuralElements = loadStructureTemplate(structureTemplateFile);
312     }
313     else {
314       keywordList = NULL;
315     }
316   }
317   if (structuralElements) return(TypeIV, structuralElements);
318   if (XMLElementWeights) return(TypeIII, XMLElementWeights);
319   if (pseudoStructuralElements) return(TypeII, pseudoStructuralElements);
320   return (TypeI, keywordList);
```

FIG. 3



Screen 1: Searcher selects terms from a product description

FIG. 4A

```
<?xml version="1.0"?>
<!DOCTYPE Recipe SYSTEM "product.dtd">

<PRODUCT_PAGE>

  <PRODUCT>
    <ITEM_ATTRIBUTES>
      <NAME>Classic Retro Cardigan</NAME>
      <STYLE_NO>23024</STYLE_NO>
      <PRICE>$169.00</PRICE>
    </ITEM_ATTRIBUTES>

    <ITEM_DETAILS>
A cult favorite since the '70s, the Retro keeps you warm when
you're playing in the mountains or wrangling lug nuts on the
beater that takes you there. A Capilene mesh liner wicks
moisture away from the skin and the chest pocket will hold
glacier glasses or car keys. With zippered handwarmer pockets,
Y-Joint&#8482; sleeves and a relaxed fit.
    </ITEM_DETAILS>

  </PRODUCT>

</PRODUCT_PAGE>
```

FIG. 4B

```
FOR $item IN
  document("data/productCatalog.xml")//PRODUCT
WHERE
  CONTAINS($item/ITEM_ATTRIBUTES/NAME, "Cardigan") OR
  CONTAINS($item/ITEM_DETAILS, "Capilene") AND
  NOT(CONTAINS($item/ITEM_DETAILS, "zippered"))
RETURN
  <RESULT_LIST>
    $item
  </RESULT_LIST>
```

FIG. 4C

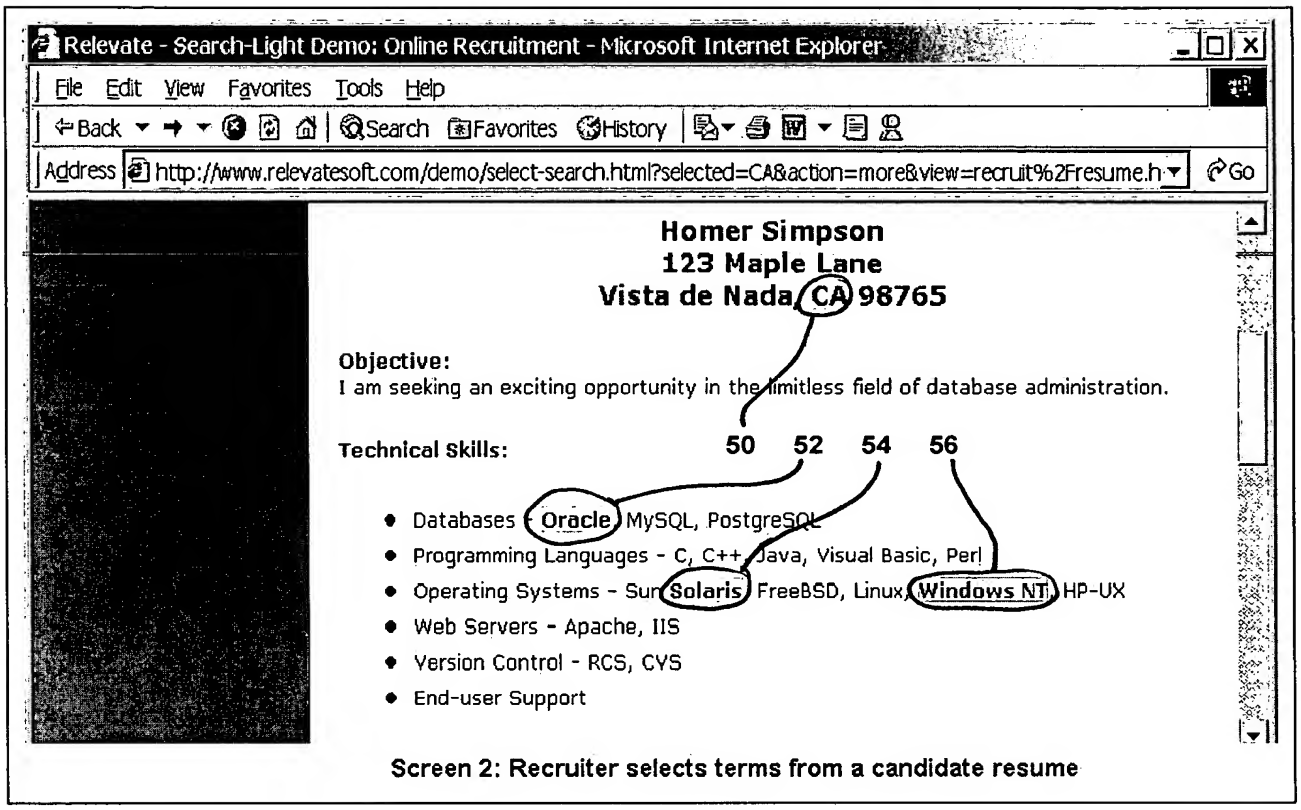


FIG. 5A

```
<b>Homer Simpson<br>
123 Maple Lane<br>
Vista de Nada, CA 98765<br>
</b>
            :
<ul>
<li>Databases - Oracle, MySQL, PostgreSQL</li>
<li>Programming Languages - C, C++, Java, Visual Basic, Perl</li>
<li>Operating Systems - Sun Solaris, FreeBSD, Linux, Windows NT, HP-
UX</li>
            :
</ul>
```

FIG. 5B

```
DEFINE FUNCTION getScore(element $item) RETURNS INTEGER* {
  <compute score based on weights>
  RETURN $score
}
FOR $item IN input()//resume
LET $MLTList := ("CA", "Oracle", "Solaris")
LET $LLTList := ("Windows NT")
WHERE
  SOME $b IN $item/B AND SOME $MLTTerm IN $MLTList AND SOME $LLTTerm
in $LLTList SATISFIES
  (CONTAINS ($b/text(), $MLTTerm/text())) AND
  NOT(CONTAINS ($b/text(), $LLTTerm/text()))
  OR SOME $l IN $item/LI AND SOME $MLTTerm IN $MLTList AND SOME
$LLTTerm in $LLTList SATISFIES
  (CONTAINS ($l/text(), $MLTTerm/text())) AND
  NOT(CONTAINS ($l/text(), $LLTTerm/text()))
RETURN
  <RESULT_LIST>
    <RESULT>$item</RESULT>
    <SCORE>getScore($item)</SCORE>
  </RESULT_LIST>
```

FIG. 5C